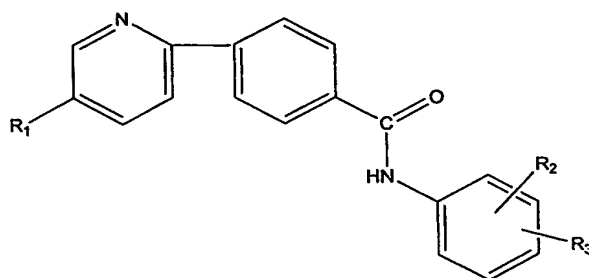


-99-

## WHAT IS CLAIMED IS:

1. A compound having the structure (I):



(I)

wherein:

R<sub>1</sub> is an alkyl;

R<sub>2</sub> is a substituent selected from a group consisting of hydrogen, an alkyl, halogen, and an alkoxy group; and

R<sub>3</sub> is a substituent selected from a group consisting of an unsubstituted or substituted alkyl group, halogen, an alkoxy group, acetyl group, and nitro group, or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1, wherein:

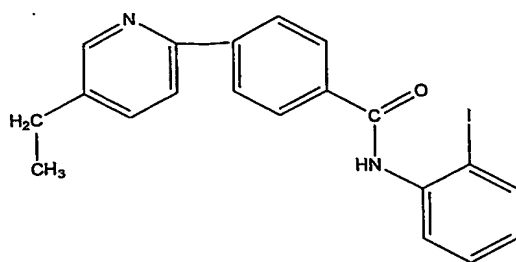
R<sub>1</sub> is selected from a group consisting of ethyl, *n*-propyl and *n*-amyl;

R<sub>2</sub> is selected from a group consisting of hydrogen, chlorine, methyl, and methoxy;

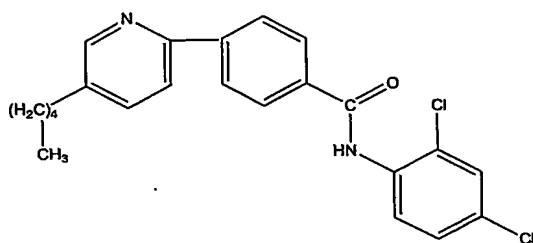
R<sub>3</sub> is selected from a group consisting of methyl, chlorine, iodine, trifluoromethyl, and methoxy.

3. The compound of claim 1, wherein the compound having the structure (I) is selected from the group of compounds having the formulae (1)-(7):

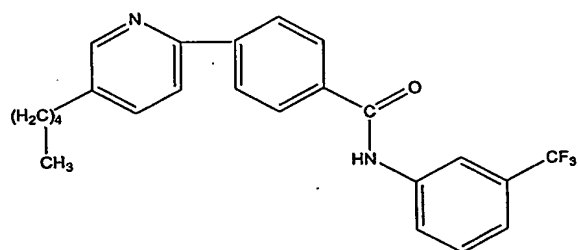
-100-



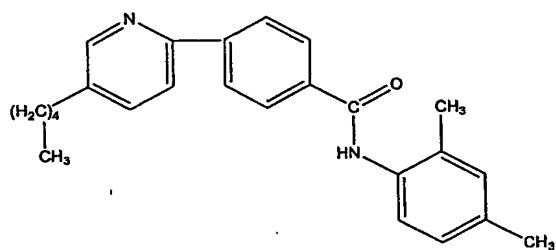
(1)



(2)

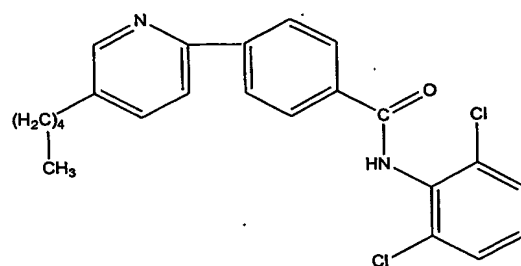


(3)

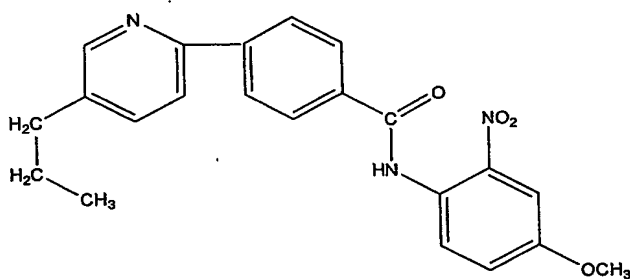


(4)

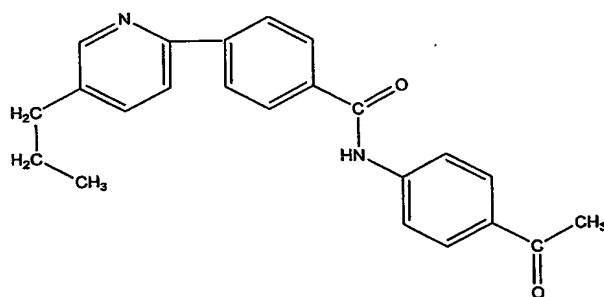
-101-



(5)

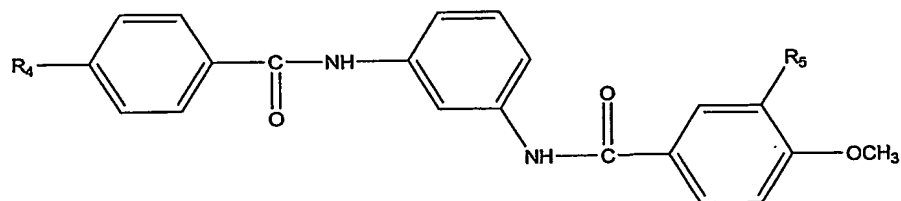


(6)



(7)

4. A compound having structure (II):



(II)

-102-

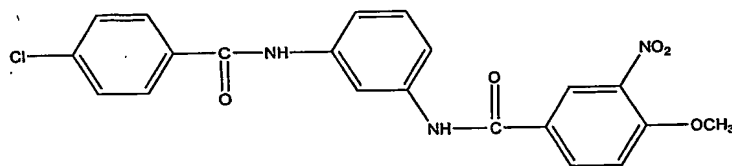
wherein:

R<sub>4</sub> is selected from a group consisting of *tert*-butyl and chlorine; and

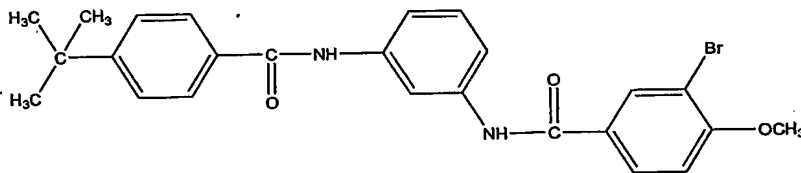
R<sub>5</sub> is selected from a group consisting of nitro group and bromine,

or a pharmaceutically acceptable salt thereof.

5. The compound of claim 4, wherein the compound having structure (II) is selected from a group consisting of compounds having the formulae (8) and (9):

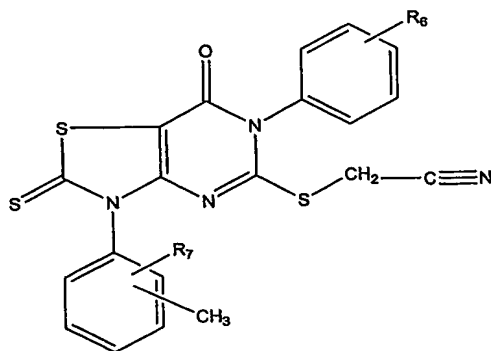


(8)



(9)

6. A compound having the structure (III):



(III)

-103-

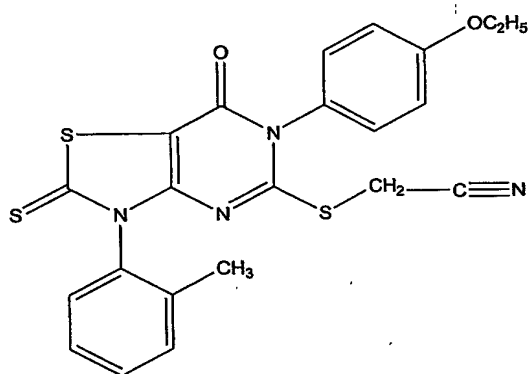
wherein:

R<sub>6</sub> is selected from a group consisting of methyl and ethoxy group; and

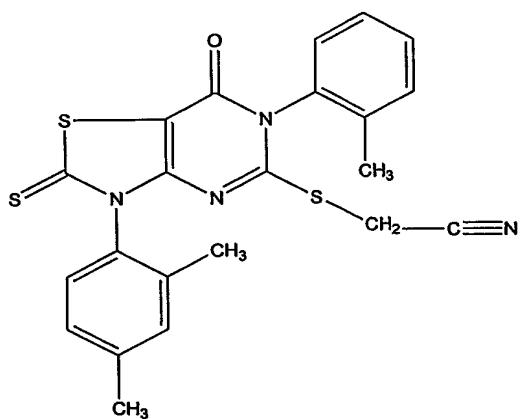
R<sub>7</sub> is selected from a group consisting of hydrogen and methyl,

or a pharmaceutically acceptable salt thereof.

7. The compound of claim 6, wherein the compound having the structure (III) is selected from the group of compounds having the formulae (10) and (11):



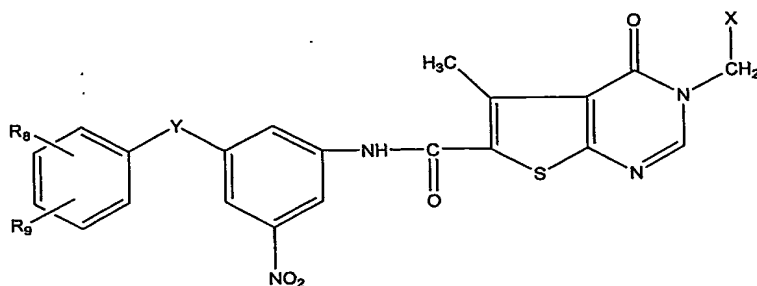
(10)



(11)

-104-

8. A compound having the structure (IV):



(IV)

wherein:

$R_8$  is selected from a group consisting of hydrogen and methyl;

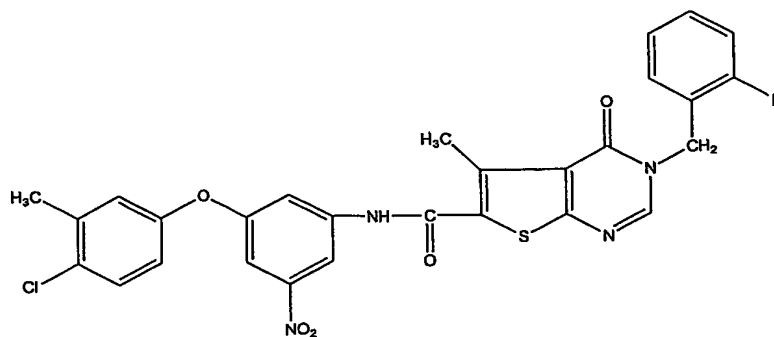
$R_9$  is selected from a group consisting of hydrogen, chlorine and fluorine;

X is selected from a group consisting of ethyl and fluorophenyl; and

Y is selected from a group consisting of oxygen and sulfur,

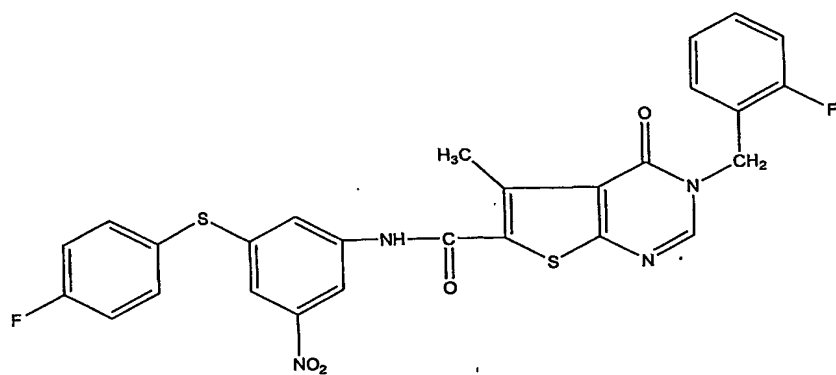
or a pharmaceutically acceptable salt thereof.

9. The compound of claim 8, wherein the compound having the structure (IV) is selected from the group of compounds having the formulae (12)-(15):

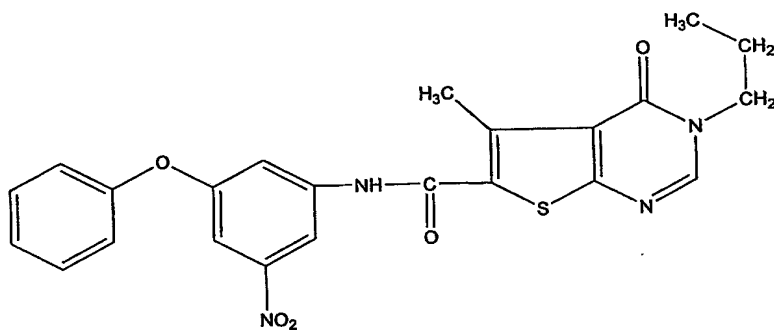


(12)

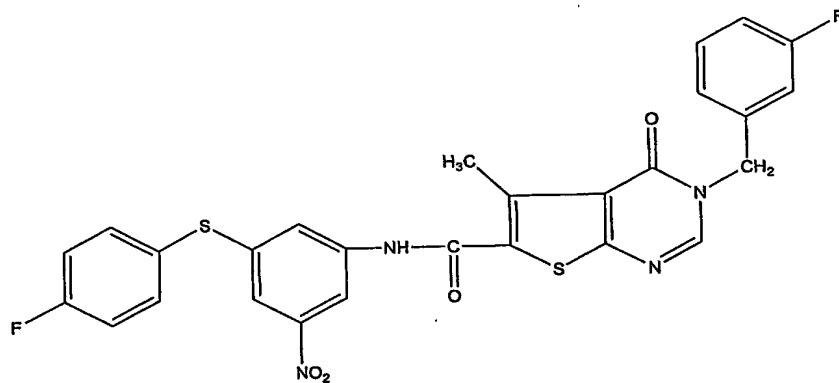
-105-



(13)



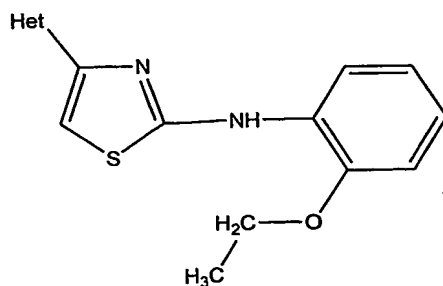
(14)



(15)

10. A compound having the structure (V):

-106-

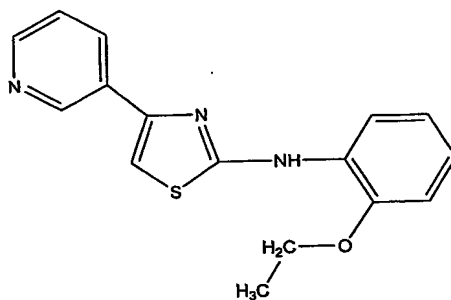


(V)

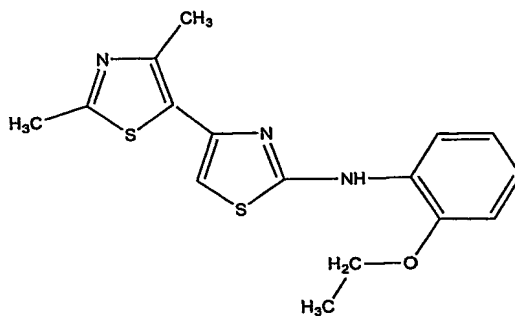
wherein Het is a heterocyclic radical.

11. The compound of claim 10, wherein the heterocyclic radical is selected from a group consisting of pyridyl and thiazolyl.

12. The compound of claim 10, wherein the compound having the structure (V) is selected from the group of compounds having the formulae (16) and (17):



(16)

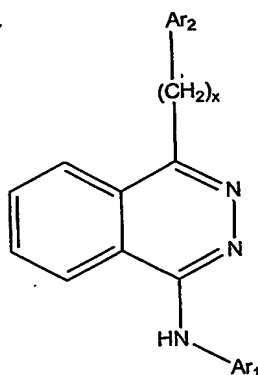


(17)



-107-

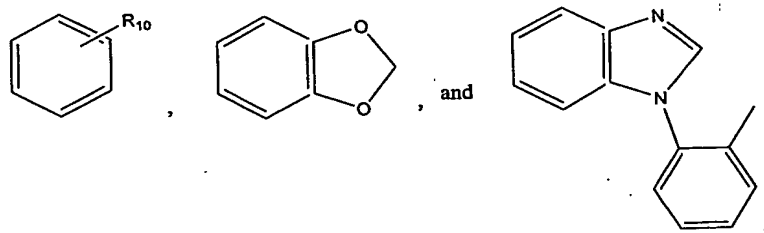
13. A compound having the structure (VI):



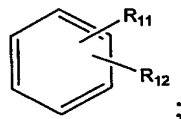
(VI)

wherein:

$\text{Ar}_1$  is an aromatic substituent selected from a group consisting of



$\text{Ar}_2$  is an aromatic substituent having the structure:

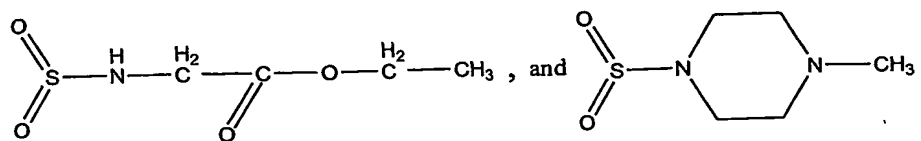


$\text{R}_{10}$  is selected from a group consisting of methyl and chlorine;

$\text{R}_{11}$  is selected from a group consisting of hydrogen, methyl, and chlorine; and

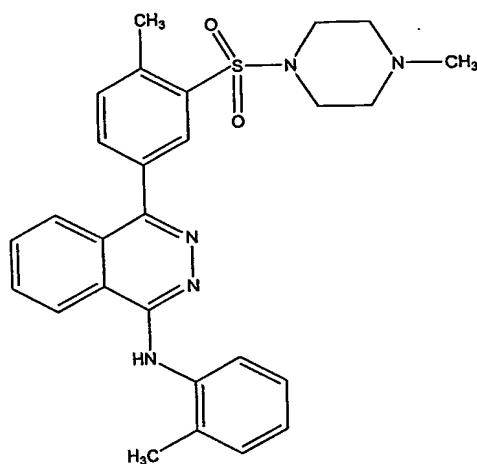
-108-

R<sub>12</sub> is selected from a group consisting of hydrogen,

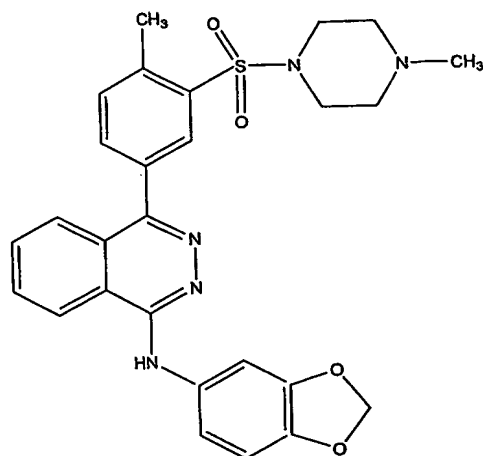


or a pharmaceutically acceptable salt thereof.

14. The compound of claim 13, wherein the compound having the structure (VI) is selected from the group of compounds having the formulae (18)-(24):

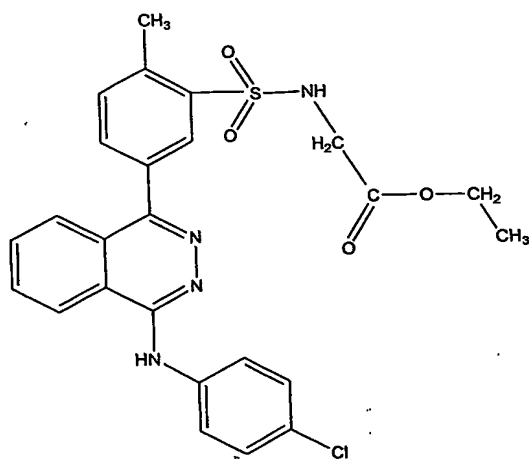


(18)

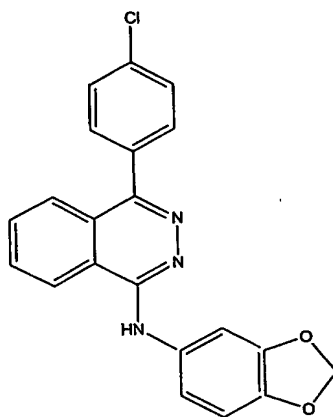


(19)

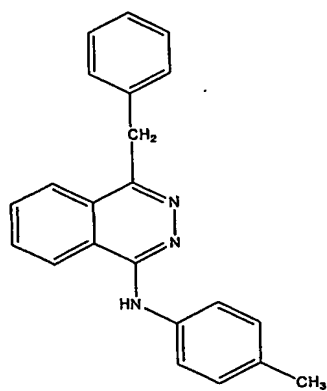
-109-



(20)

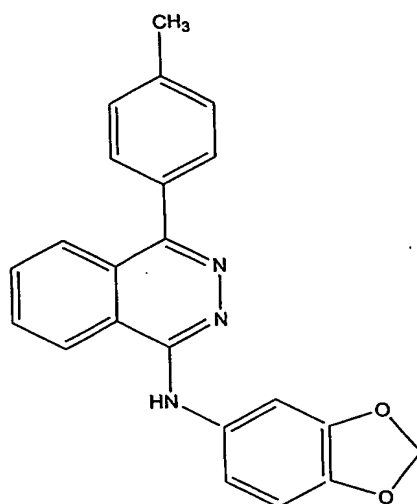


(21)

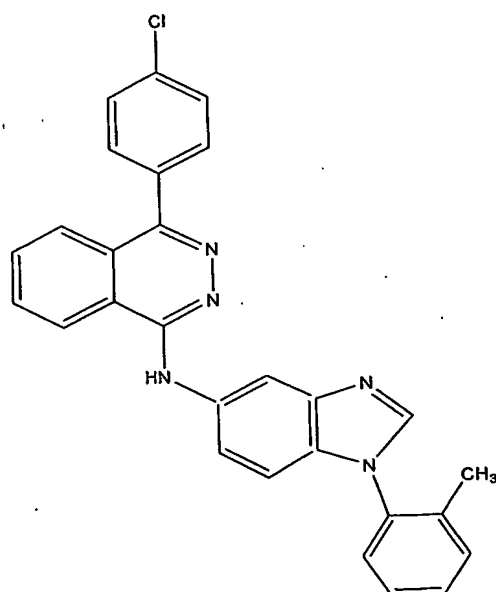


(22)

-110-



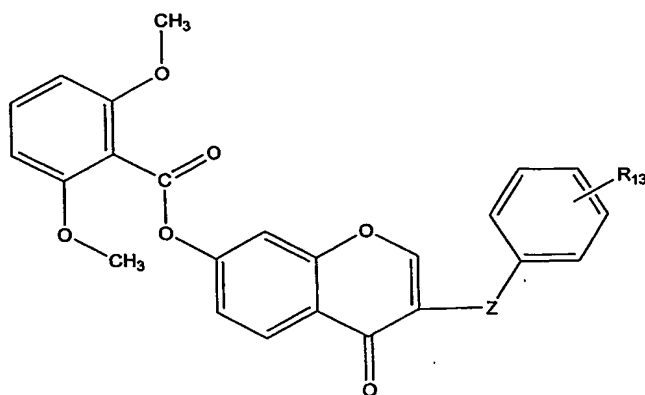
(23)



(24)

15. A compound having the structure (VII):

-111-



(VII)

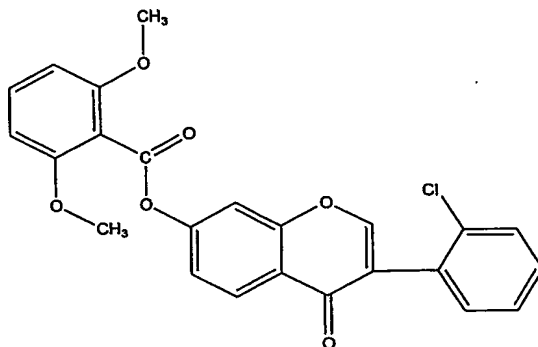
wherein:

$R_{13}$  is selected from a group consisting of chlorine, bromine, and methoxy; and

Z is oxygen or a single  $\sigma$ -bond,

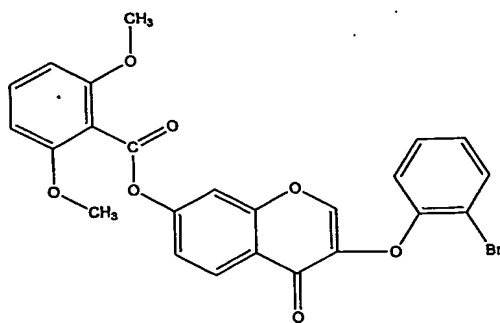
or a pharmaceutically acceptable salt thereof.

16. The compound of claim 15, wherein the compound having the structure (VII) is selected from the group of compounds having the formulae (25)-(27):

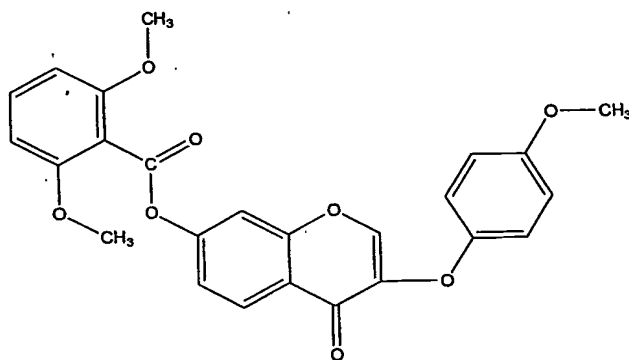


(25)

-112-

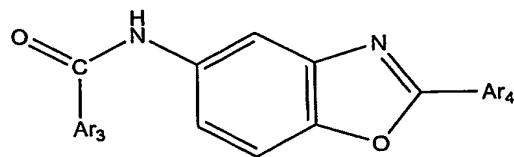


(26)



(27)

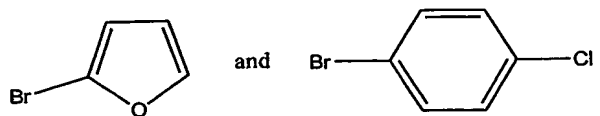
17. A compound having the structure (VIII):



(VIII)

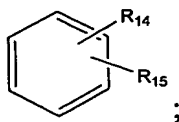
wherein:

Ar<sub>3</sub> is an aromatic substituent selected from a group consisting of



-113-

Ar<sub>4</sub> is an aromatic substituent having the structure

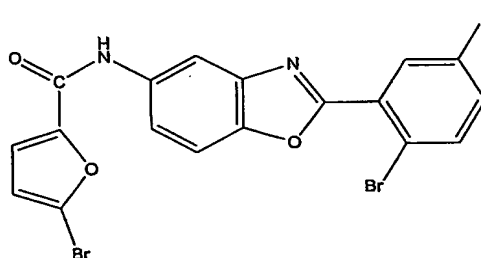


R<sub>14</sub> is selected from a group consisting of hydrogen and bromine; and

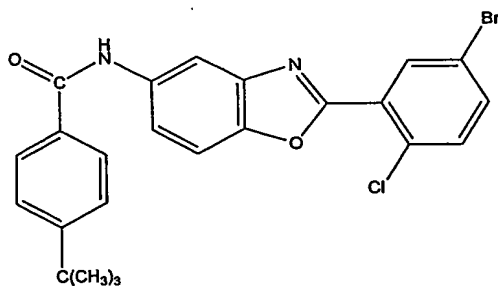
R<sub>15</sub> is selected from a group consisting of *tert*-butyl and iodine,

or a pharmaceutically acceptable salt thereof.

18. The compound of claim 17, wherein the compound having the structure (VIII) is selected from the group of compounds having the formulae (28) and (29):



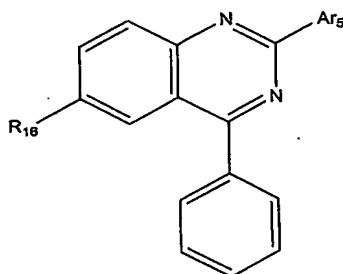
(28)



(29)

19. A compound having the structure (IX):

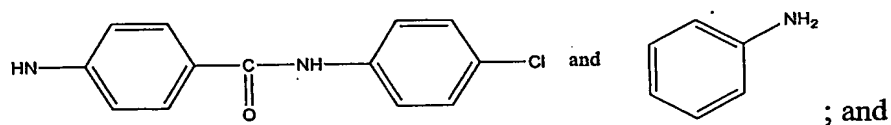
-114-



(IX)

wherein:

Ar<sub>5</sub> is an aromatic substituent selected from a group consisting of

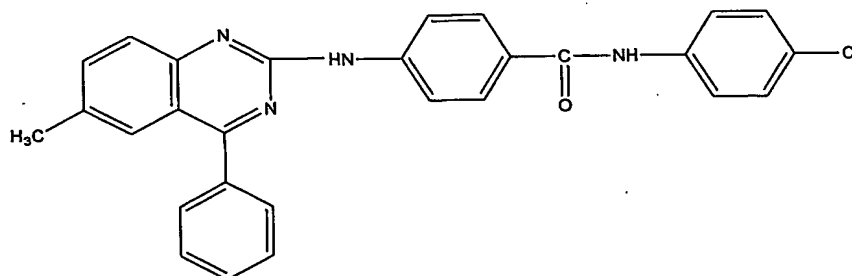


; and

R<sub>16</sub> is selected from a group consisting of hydrogen and methyl,

or a pharmaceutically acceptable salt thereof.

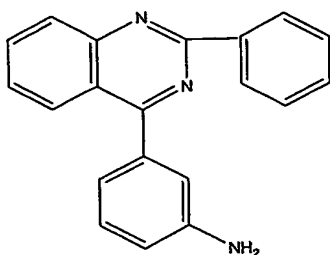
20. The compound of claim 19, wherein the compound having the structure (IX) is selected from the group of compounds having the formulae (30) and (31):



(30)

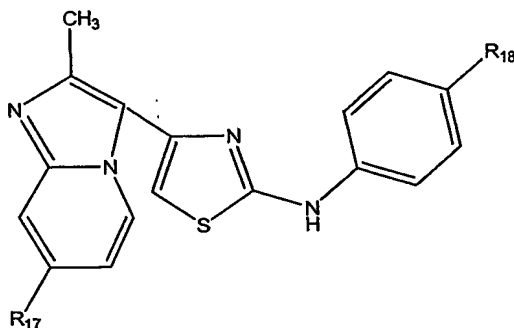


-115-



(31)

21. A compound having the structure (X):



(X)

wherein:

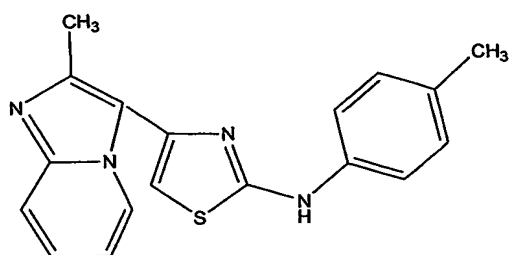
R<sub>17</sub> is selected from a group consisting of hydrogen and methyl; and

R<sub>18</sub> is selected from a group consisting of methyl, methoxy, and ethoxy,

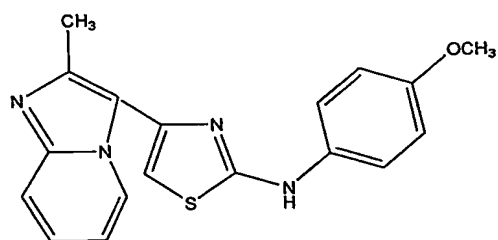
or a pharmaceutically acceptable salt thereof.

22. The compound of claim 21, wherein the compound having the structure (X) is selected from the group of compounds having the formulae (32)-(34):

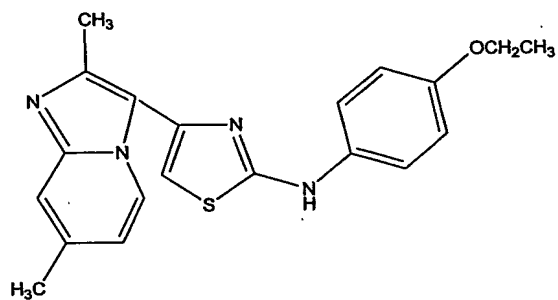
-116-



(32)

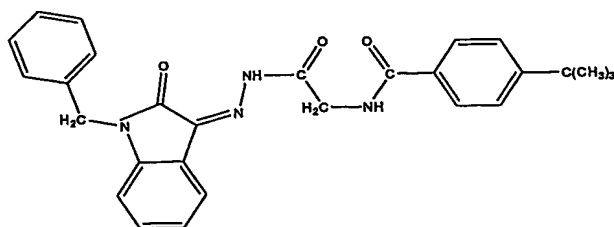


(33)



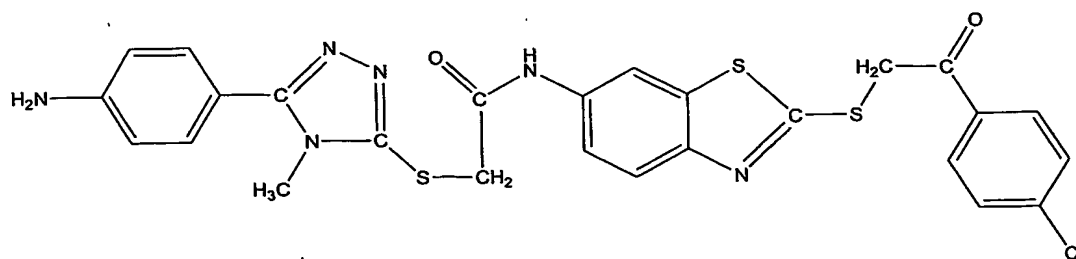
(34)

23. A compound selected from a group having the formulae (35)-(60):

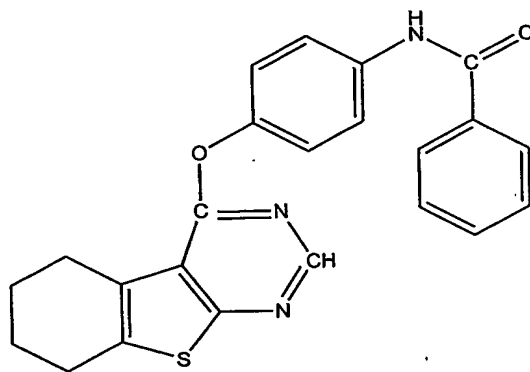


(35)

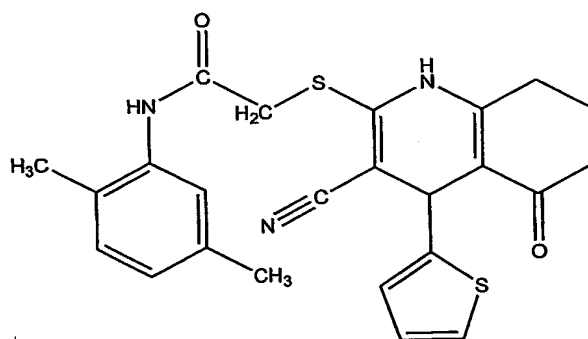
-117-



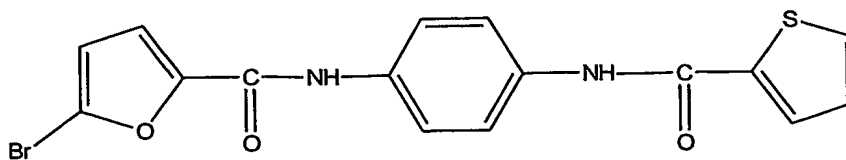
(36)



(37)

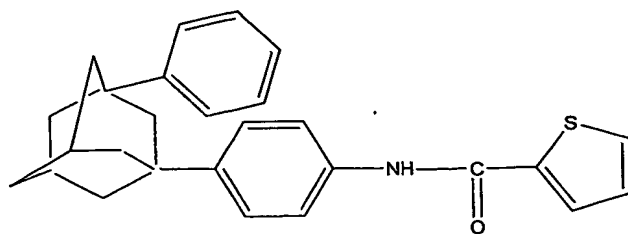


(38)

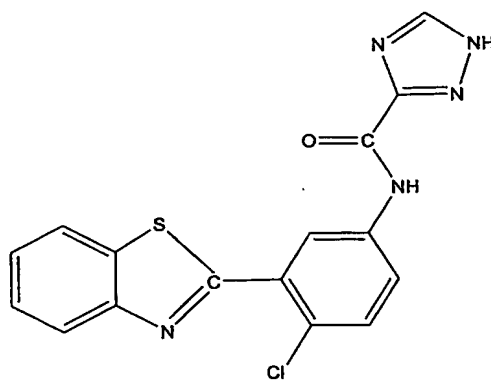


(39)

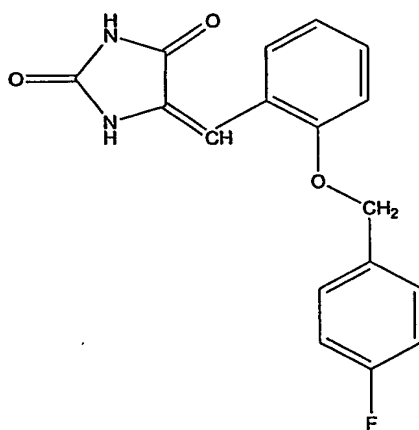
-118-



(40)

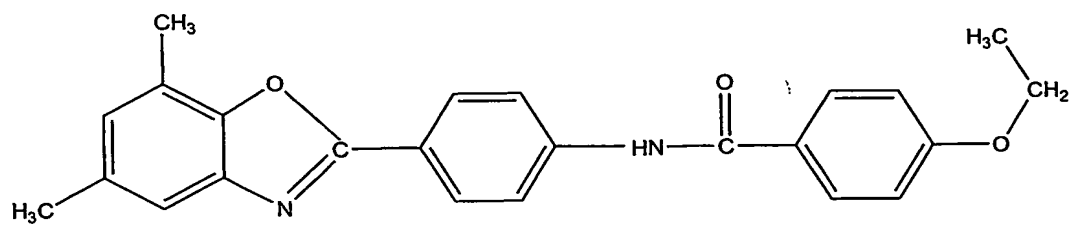


(41)

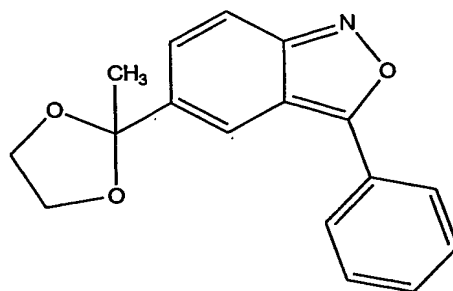


(42)

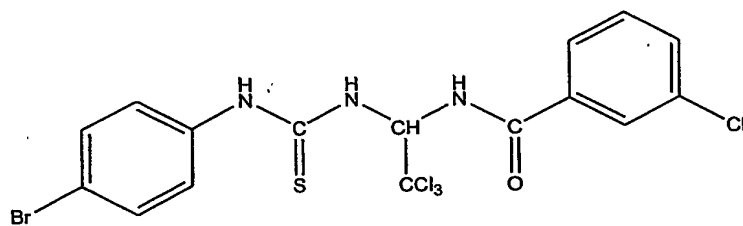
-119-



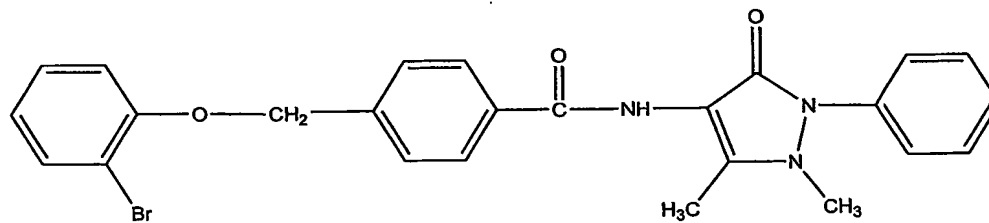
(43)



(44)

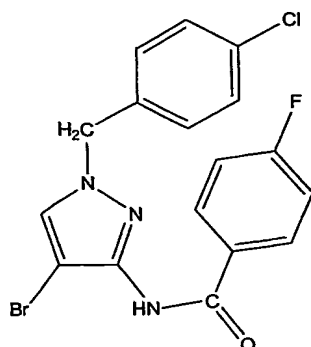


(45)

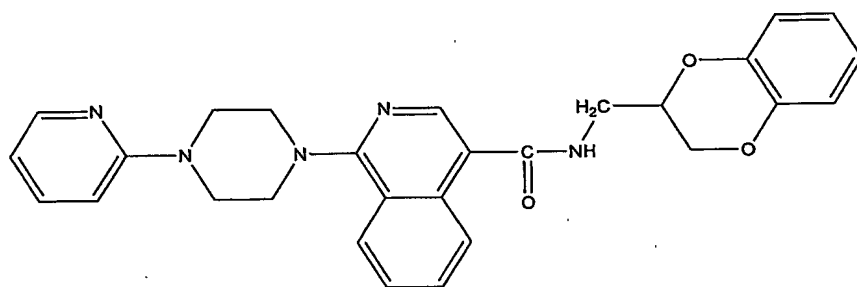


(46)

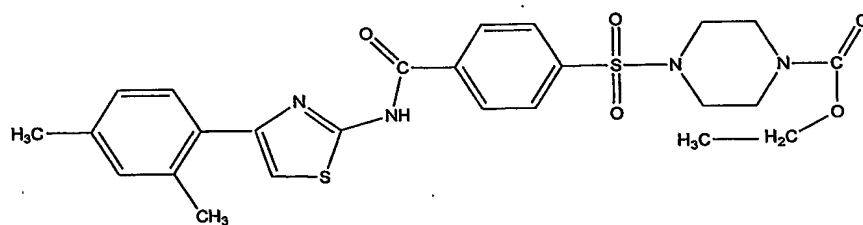
-120-



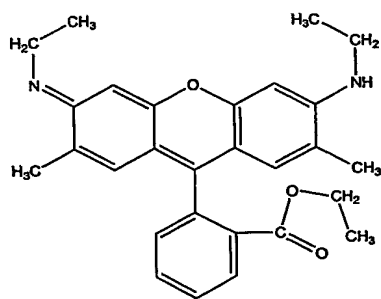
(47)



(48)

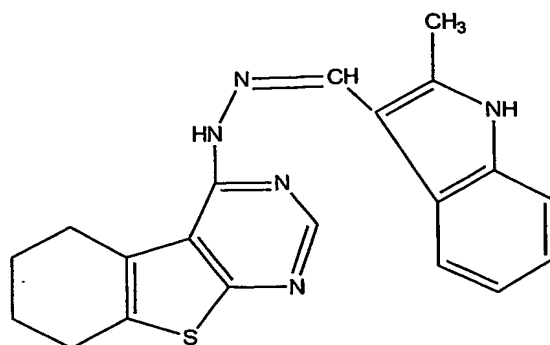


(49)

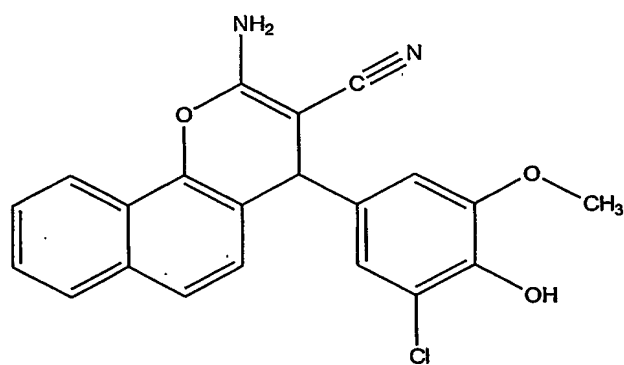


(50)

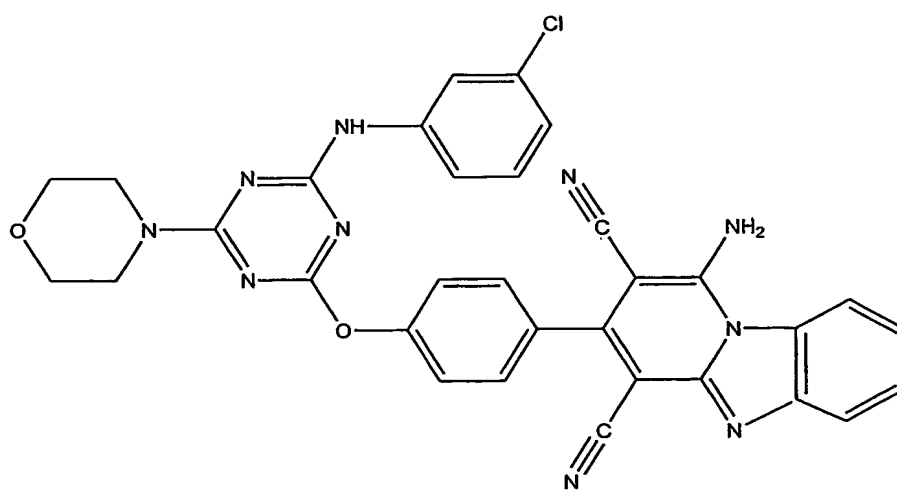
-121-



(51)

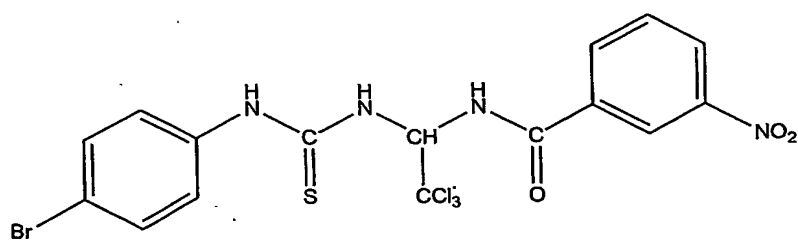


(52)

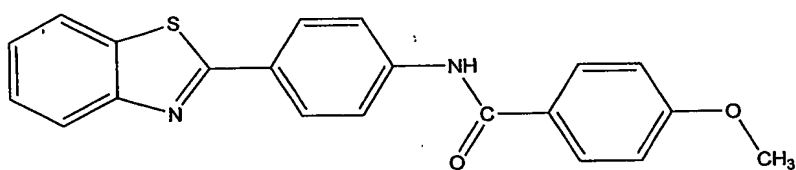


(53)

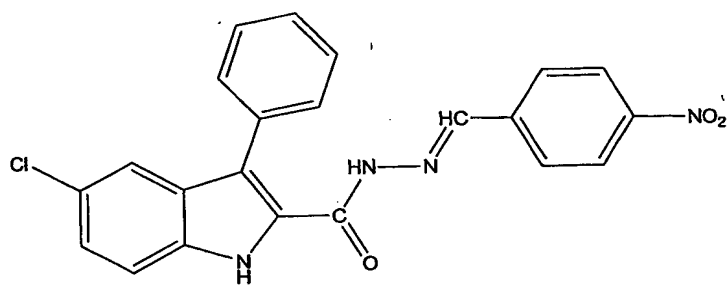
-122-



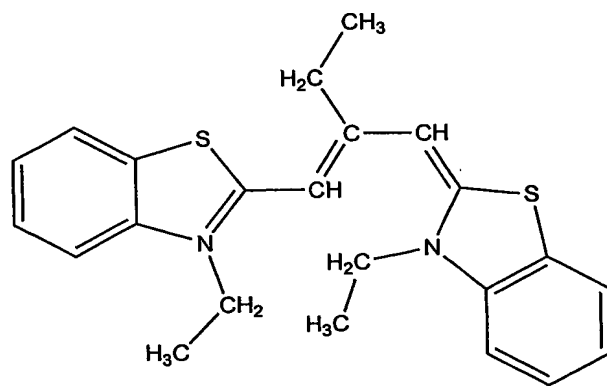
(54)



(55)



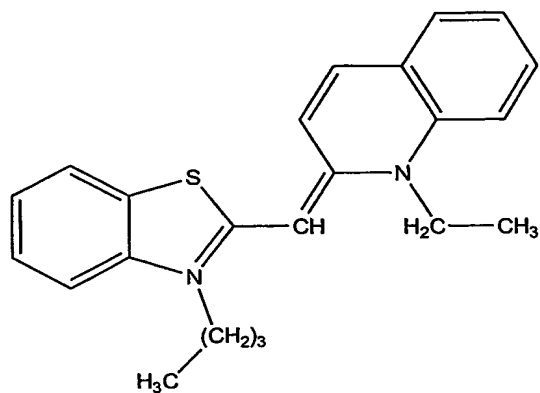
(56)



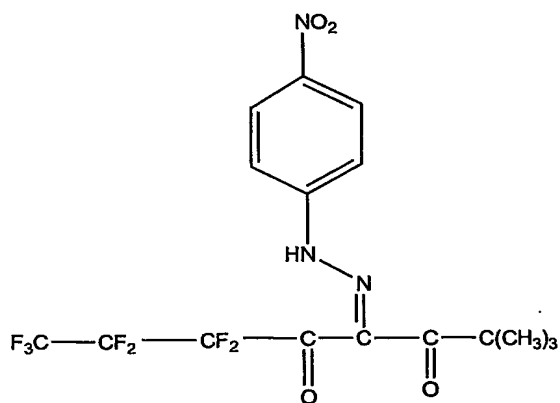
(57)



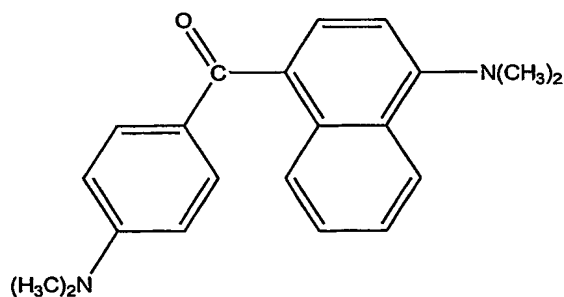
-123-



(58)



(59)



(60)

24. A compound, comprising an alkylpyridyl moiety bridged to a benzamide moiety, wherein the benzamide moiety includes a first substituent attached to the benzamide moiety via the nitrogen atom of the benzamide moiety.

-124-

25. The compound of claim 24, wherein the first substituent comprises an aryl structure which includes at least one second substituent, wherein the second substituent is selected from a group consisting of an unsubstituted or unsubstituted alkyl, a halogen, an alkoxy, acetyl, and nitro.

26. A compound, comprising two benzamide moieties connected with a phenylene bridge.

27. The compound of claim 26, wherein the phenylene bridge is 1,3-phenylene group.

28. The compound of claim 26, wherein each of the benzamide moieties includes a substituent, wherein the substituent is selected from a group consisting of *tert*-butyl, chlorine, bromine, and nitro.

29. A compound, comprising a first heterocyclic ring fused with a second heterocyclic ring, wherein:

(a) the first ring is a substituted 1,3-diazine-6-one; and

(b) the second ring is selected from an N-substituted thiazole-2-thione and a substituted thiophene.

30. A compound, comprising a thiazole moiety carrying a heterocyclic substituent and a secondary amino substituent, wherein:

(a) the heterocyclic substituent is elected from thiazolyl and pyridyl; and

(b) the secondary amino substituent is ethoxyphenylene group.

31. A compound, comprising a phthalazine moiety carrying at least two substituents, wherein:

(a) the first substituent includes a substituted phenyl or benzyl group; and

(b) the second substituent includes a secondary aromatic amino group.

-125-

32. A compound, comprising a substituted chromone moiety carrying at least two substitutents, wherein:

- (a) the first substituent includes a substituted phenyl or phenoxy group; and
- (b) the second substituent includes an aromatic ester group.

33. A compound, comprising a substituted benzoxazole moiety carrying at least two substitutents, wherein:

- (a) the first substituent is selected from a substituted phenyl group and a substituted benzamido group; and
- (b) the second substituent is selected from a substituted phenyl group and a substituted furylamido group.

34. A compound, comprising a phenylquinazoline moiety and further including a substituent, wherein the substituent is selected from a secondary aromatic amino group and an anyline moiety.

35. A compound, comprising a thiazole moiety bridged to a substituted pyrrole-pyridine moiety.

36. The compound of claim 35, wherein the thiazole moiety further includes a secondary aromatic amino group.

37. A method for treating a cell proliferative disorder in a subject, said method comprising administering an effective amount of any compound of claims 1-36, or any combination thereof, or pharmaceutically acceptable salts, hydrates, solvates, crystal forms and individual diastereomers thereof, to a subject in need of such treatment.

38. The method of claim 37, wherein the cell proliferative disorder is basal cell carcinoma, medulloblastoma or meningioma.

-126-

39. The method of claim 37, wherein the subject is a human or another mammal.

40. The method of claim 37, further including administering the compound in combination with a therapeutic agent, immunomodulatory agent, therapeutic antibody or an enzyme inhibitor.

41. The method of claim 40, wherein the therapeutic agent is methotrexate, cisplatin/carboplatin, canbusil, dactinomycin, taxol (paclitaxel), antifolate, colchicine, demecoline, etoposide, taxane/taxol, docetaxel, doxorubicin, anthracycline antibiotic, doxorubicin, daunorubicin, carminomycin, epirubicin, idarubicin, mithoxanthrone, 4-dimethoxy-daunomycin, 11-deoxydaunorubicin, 13-deoxydaunorubicin, adriamycin-14-benzoate, adriamycin-14-octanoate or adriamycin-14-naphthaleneacetate, irinotecan, topotecan, gemcitabine, 5-fluorouracil, leucovorin carboplatin, cisplatin, taxanes, tezacitabine, cyclophosphamide, vinca alkaloids, imatinib, anthracyclines, rituximab, trastuzumab, bevacizumab, OSI-774, or Vitaxin.

42. A pharmaceutical composition comprising any compound of claims 1-36, or any combination thereof, in a pharmaceutically acceptable carrier.

43. An article of manufacture comprising packaging material and a pharmaceutical composition contained within the packaging material, wherein the packaging material comprises a label which indicates that the pharmaceutical composition can be used for treatment of disorders and wherein said pharmaceutical composition comprises any compound of claims 1-36, or any combination thereof.

44. A process for making a pharmaceutical composition comprising combining any compound of claims 1-36, or any combination thereof, or its pharmaceutically acceptable salts, hydrates, solvates, crystal forms salts and individual diastereomers thereof, and a pharmaceutically acceptable carrier.

45. A method of inhibiting an altered growth state of a cell having a *ptc* loss-of-function phenotype, a *hedgehog* gain-of-function phenotype or a *smoothed* gain-of-

-127-

function phenotype, comprising contacting the cell with a composition comprising any compound of claims 1-36, or any combination thereof.

46. The method of claim 45, wherein the compound is a *hedgehog* signal transduction agonist.

47. The method of claim 46, wherein the agonist agonizes *ptc* inhibition of *hedgehog* signaling.

48. The method of claim 45, wherein the compound is a *hedgehog* signal transduction antagonist.

49. The method of claim 48, wherein the antagonist interferes with activation of a *hedgehog*, *patched*, or *smoothened*-mediated signal transduction pathway.

50. The method of claim 45, wherein the cells are normal cells.

51. The method of claim 45, wherein the cells are cancer cells.

52. The method of claim 45, wherein the contacting is performed *in vivo*.

53. The method of claim 45, wherein the contacting is performed *in vitro*.

54. The method of claim 45, wherein the composition is administered as part of a therapeutic or cosmetic application.

55. The method of claim 53, wherein the therapeutic or cosmetic application is regulation of neural tissues, bone and cartilage formation and repair, regulation of spermatogenesis, regulation of smooth muscle, regulation of lung, liver and other organs arising from the primitive gut, regulation of hematopoietic function, or regulation of skin and hair growth.

56. A method of identifying a compound that modulates cell proliferation in a cell having a *ptc* loss-of-function phenotype, a *hedgehog* gain-of-function phenotype or a *smoothened* gain-of-function phenotype, comprising:

-128-

a) incubating components comprising any compound of claims 1-36, a test compound, and a cell having a *ptc* loss-of-function phenotype, a *hedgehog* gain-of-function phenotype or a *smoothened* gain-of-function phenotype, under conditions sufficient to allow the components to interact; and

b) measuring the ability of the test compound to affect cell proliferation by detecting an increase or decrease in expression of signal transduction activity.

57. The method of claim 56, wherein the signal transduction activity is expression of *hedgehog*, *ptc*, or *smoothened*.

58. A method of monitoring a therapeutic regimen for treating a subject having a cell proliferative disorder comprising determining a change in cell proliferation during therapy.

59. The method of claim 58, wherein the therapy comprises the treatment of claim 37.